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FACTORS INFLUENCING CAREER AND TECHNICAL PROFESSIONALS'
CAREER ADVANCEMENT

by

Deidra Rena White Minor

A Dissertation
Submitted to the Graduate School,
the College of Education and Human Sciences
and the School of Education
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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May 2019

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2019

Published by the Graduate School



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ABSTRACT

To remain globally competitive, the U.S. must address the need for a more technical- skilled workforce (United States Department of Labor, 2013). A technical- skilled has workforce occupations that require vocational associate's degrees (Lewis, 2004). It is evident that the initiative to meet the demand for a highly competitive workforce for the 21st century requires a combination of progressive education, advanced skills and professional experience (Threeton, 2006). Historically, the technical worker gained skills without definite planned opportunities for higher education and career upward mobility (Skolnik, 2010). Further, some post-secondary institutions tend to dismiss the importance of recruiting the technical community college student because they believe the technical college student does not intend to transfer to a four-year institution (Findlen, 1997). However, according to Grubb (1991), CTE students often intend to transfer to other institutions and view higher education as an avenue for advancing their careers. However, industries that are in high demand of a technical- skilled workforce are partnering with academic institutions to design curricula to develop the human capital within their organizations (Mupinga & Livesay, 2015). Further, relationships between community colleges and four-year institutions are eliminating academic barriers for the technical workforce. As a result, applied baccalaureate programs have become an increasingly new phenomenon in education (Rudd, Bragg, & Townsend, 2009). The applied baccalaureate programs are providing advisement, seamless transitions and career progression for CTE professionals (Rudd, Bragg, & Townsend, 2009). Several states have collectively shared their assessments and knowledge of these academic policies and practices, to include the worth they bring to

the nation (AQCP, 2014). This research revealed the benefits of a quality career pathway for career and technical professionals as educational progress, career development, and socioeconomic growth. The most notable information resulting from this study is that all participants reported a seamless transition from a two-year CTE academic program to a four-year applied baccalaureate program.

Keywords: academic pathway, career pathway, applied baccalaureate, transfer degrees

ACKNOWLEDGMENTS

A special thank you to Dr. Lilian Hill, my dissertation committee chair. I am thankful for her agreeing to serve as my chair. Her professionalism and encouraging spirit motivated me during the challenging periods to continue and complete my dissertation. I am genuinely grateful to my committee members, Drs. Holly Foster, Myron Labat, and Richard Mohn, whose support and guidance contributed to the success of this study.

I would like to acknowledge the inspiration that I received from the Human Capital Development Program faculty and staff. Drs. Cindy Gaudet and Heather Annulis, I sincerely appreciate your endless encouragement and steadfast mentoring. I also wish to express my sincere gratitude to my family and friends for your prayers and positive words.

DEDICATION

Dana and DaLacey, my precious gifts from GOD, because of you, I was determined to complete my terminal degree. I hope that this family journey, which this process has been, has strengthened your beliefs that “Through Christ all things are possible” (Philippians 4:13). And then, a special dedication to my mother for believing in me, supporting all my accomplishments, and knowing that especially this one, I would obtain.

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LIST OF ABBREVIATIONS

AQCP	Alliance Quality Career Pathways
CTE	Career and Technical Education
USM	The University of Southern Mississippi

CHAPTER I - INTRODUCTION

Approximately 51% of postsecondary students in the United States receive subbaccalaureate credentials, and more than half (74%) of these subbaccalaureate credentials are awarded in career and technical education (Zhang & Oymak, 2018). Community colleges are the leading institutions in workforce development because they are strategic in their offering of Associate in Applied Science (AAS) programs that are technology specific. The career and technical education (CTE) programs are created for the purpose of providing regional industries with a skilled workforce. Therefore, educators and business leaders are both invested in the development of curriculum and the future of the student. In essence, a career and technical education develops a student's potential to become a worker for the new economy, and creates career pathways by providing education for those who desire a better way of life.

Historically, the intent of career and technical education was to prepare individuals to go to work in a short amount of time (Batts & Pagliari, 2013). According to the U.S. Department of Education (2015), the career and technical applied degree programs in place today are the end results of a collaboration of local industry and community college administrators. These two stakeholders jointly to determine the academic core curriculum that improves the competencies of a demand-driven, technical workforce. The resulting core curriculum was designed to deliver training in specific mastery skills for local industry and workforce development (Hughes & Karp, 2006). Typically, career and technical programs award certificates, occupational education diplomas, or applied associates degrees. Although completers of career and technical programs receive credentials that are satisfactory for employment opportunities, the

academic core curriculum often does not establish a transferable pathway to higher level academic credentials such as a Bachelor's degree or applied baccalaureate degree (U.S. Department of Education, 2015).

In 1990, the Carl D. Perkins Vocational and Applied Technology Act (Perkins II) was enacted to improve technical education in order to address workforce issues that were considered to be factors contributing to the insufficiency of global market leadership by the United States. The intent was to align PK-12, community colleges, public universities and the workforce training system. In particular, its primary purpose was to increase growth in vocational and/or career and technical education (CTE), so that individuals in technical careers could take advantage of designated pathways to career advancement (Gordan, 2003). The Carl D. Perkins CTE Act was updated in 2006, specifically to encourage career advancement for vocational professionals and/or career and technical professionals. The CTE Act of 2006 provided a strategy for preparing students to matriculate from secondary to postsecondary education and into quality jobs and careers. The combination of education and training for career and technical professionals supports the initiative to build a competitive workforce (Threeton, 2006).

In 2011, the Obama Administration approved close to \$5 million in career and training federal grant funds with the purpose of investing in the development of a skilled workforce that could help meet labor demands, while also recognizing the need for STEM (science, technical, engineering and math) workers (U.S. Department of Labor, 2013). A major recipient of the federal grant funds was community colleges, due to their orientation towards workforce development and because of their partnerships with employers. According to the 2011-2012 NCES career technical education statistics, the

student population at community colleges comprised 26.2% enrolled in academic and 75.8% in vocational programs (NCES, 2012). A community college two-year CTE education affords graduates an opportunity to enter the workforce as skilled workers in entry-level positions.

Background of the Problem

Competitive industries that rely on technical skilled labor are working closely with vocational educators to develop curricula to prepare individuals for 21st century technical-specific skilled jobs within their organizations. Further, industry leaders are being proactive regarding career development for their employees through building relationships with four-year institutions to ensure opportunities are available for baccalaureate attainment for technical employees (Mupinga & Livesay, 2015). The relationship includes developing agreements concerning the transfer and use of technical curriculum coursework from two-year colleges to a four-year institution (Mupinga & Livesay, 2015). In addition to the agreement to transfer the technical coursework, it gives the students a foundation for their post-secondary theoretical education. The collaboration between industry leaders and community colleges is an important part of all community colleges' established goals; however, the practice of creating a means of seamless transition from technical coursework to a four-year institution is inconsistent throughout the United States. Many four- year institutions consider technical coursework as terminal, occupational coursework and not as transfer education (Cohen & Ignash, 1993).

Career technical students could become our nation's future STEM leaders. The motivation of the students to obtain a community college CTE degree is to secure

employment; however, to become future industrial leaders, CTE students have to consider matriculating from a two-year college to a four-year college to obtain a Bachelor of Science (BS) degree (Batts & Pagliari, 2013). Usually, the CTE associate's degree is a terminal degree, without a viable pathway to advanced-academic credentials. The lack of advanced educational opportunities for continuing education has led to challenges in career development and career progression for individuals working in a technical profession.

In the United States, there is a need for a greater focus on creating clear academic pathways for career and technical students to pursue Bachelor of Science degrees, which are often referred to as applied baccalaureate degrees. Technical professionals with applied baccalaureate degrees possess higher academic credentials and additional professional competencies, which gives them a greater opportunity to achieve their professional and personal goals. Many CTE graduates are motivated to pursue a four-year degree for professional development, job advancement, and increased salary (Batts & Pagliari, 2013). Sixty-eight percent of the students reported increased salary as a very important reason to continue their CTE education after entering the workforce, while 69% of students reported job placement to be very important (Batts & Pagliari, 2013).

A CTE graduate is often qualified to work in his or her technical area of expertise and many times earned a higher salary than graduates of academic programs. However, these students continue to face a lack of upward mobility within their organizations. Nonetheless, in 2008 the employment growth in occupations requiring a vocational associate's degree doubled (Lewis, 2004). It is for this reason that the U.S. should address the need for technical educational pathways. Our nation's economic global

competitiveness is a top priority (United States Department of Labor, 2013). This is evident in the United States' initiatives toward developing an educated workforce in STEM fields through creating pathways for success. However, much of the focus has been on the science, engineering, and math disciplines, with less attention placed on the technical fields. Yet, we live in a world with rapid growth of technology and an increased need for a technical workforce.

Individuals need to be able to pursue a career technical education (CTE) with no dead-ends and with the ability to progress in their careers in order to contribute to the country's economic development. Therefore, CTE students must have clear pathways for successful matriculation to a 4-year institution, to develop the technical leadership skills needed in the workplace. However, not enough is known about the barriers to pathways to success of this group of individuals pursuing careers in technical fields that are identified as essential to the global economic competitiveness of the United States.

Furthermore, with the onset of political debate/agendas targeting the return of jobs to the U.S. that have been outsourced to other countries, the national resurgence of technical jobs require those who are highly skilled and trained to support the economic development initiatives that have been established. Unfortunately, the idea that technical education credentials are *terminal* in higher education can be seen as a disadvantage to CTE individuals, as common institutional practices suggest that the career succession needs of these students are not being recognized, and therefore, can be assumed to be not well supported.

CTE Challenges

A significant issue in developing the full academic potential of technical professionals is that there is a general lack of understanding for the need to transfer a CTE Applied Associate's degree to a four-year institution. Some educators believe technical college students do not intend to transfer to four-year institutions, technical college courses do not transfer to four-year institutions, and the number of students who want to transfer from a technical to four-year college are so low that institutions should not accommodate them (Findlen, 1997). These beliefs can be refuted by the following: technical college students often intend to transfer to other institutions and view higher education as a way to advance their careers; technical college students consider enrolling in college, regardless of the level, as a stepping stone; and therefore, course credit from community and technical colleges transfer to four-year institutions (Grubb, 1991). However, research suggests that higher education policies impede students' abilities to transfer after attending technical and occupational institutions (Findlen, 1997).

According to Skolnik (2010), the notion of students transferring from a technical to a four-year college is controversial. As a result of institutional academic policies and procedures, students in many Applied Associates in Science programs do not have a clear educational pathway to continue their career development to include a baccalaureate degree and studies beyond. Skolnik suggests that access increases the effectiveness of a postsecondary option and can increase social equity throughout the country. Technical colleges are visible and viable institutions. Educational leaders should remain steadfast to the missions of technical and four-year programs and allow options for students to transfer between institutions (Skolnik, 2009).

Cohen and Ignash (1993) reviewed the influence of policies on the ability for students with occupational (i.e., nonliberal arts disciplines, including but not limited to, technical agriculture, business and office, marketing, health, technical education, engineering, and education) credits from a community college to transfer to four-year institutions. California, Texas, and Illinois implemented an effective transition process to transfer non-liberal art courses between community colleges and research and comprehensive universities. In most cases, students could transfer non-liberal arts credits earned at the community college level to four-year institutions, particularly at comprehensive state universities (Cohen & Ignash, 1993). The successful implementation of these policies are evidence of how academic procedures can be helpful in supporting the career development of CTE students, and thus provide implications for understanding other barriers that may exist.

Problem Statement

A rapid growth of technology in general and an increased need for a technical workforce, specifically, has contributed to the U.S. economic development initiatives towards global competitiveness. This is evident in the United States' initiatives towards developing an educated workforce in STEM fields through creating pathways for success. Few studies have specifically examined the career and technical students' and professionals' career paths and opportunities for career progression. Instead, much of the focus has been on the science, engineering, and math disciplines, with less attention placed on the technical-related disciplines, despite a large percentage of students pursuing technical associate's degrees and certificates. Although the need for human capital with

technical knowledge, skills and abilities has been acknowledged, there is a lack of emphasis on higher education for this population.

The purpose of this study was to determine if higher education and academic credentials are required competencies for technical professionals' career success.

According to Gray (2008), 13.8 million jobs would be available for individuals who have a high school diploma but do not have a four-year degree. Among these individuals are career and technical professionals with two-year associate's degrees or certificates that are considered terminal, with barriers to continuous professional credentials. Current literature identifies the lack of transferability of CTE academic credits to a four-year institution as the main deterrent to educational advancement. More needs to be known about other influences of applied baccalaureate degrees on the career development of CTE professionals.

Conceptual Framework

The Career Pathways Model, a systematic model connecting levels of education to marketable credentials and economic success, was used in this study as a conceptual framework to guide the understanding of the relationship between institutional practices and CTE students' career progression. Career pathway models are beneficial to any individual who desires to pursue an academic or career and technical education (CTE). The purpose of career pathway models is to encourage education and strengthen communities' workforces and economies by providing individuals within the communities with a roadmap containing well-aligned educational programs, several entry

levels into programs, and several exit levels leading to employment opportunities (Alliance for Quality Career Pathways, 2014).

Second, the Social Cognitive Career Theory (SCCT) developed by Lent, Brown and Hackett (1994), was used to inform this study. SCCT extends Bandura's Social Cognitive Theory (Lent et al., 1994) by explaining how individuals use self-efficacy, or their belief in their capabilities, to determine their interests, choices, and performance as it relates to education and occupations. SCCT further explains how individuals formulate such interest, choices and performance through an understanding of their individual thoughts of self-efficacy, outcomes, expectations and goals. In addition, the theory offers a context for the study of barriers in career development (Lent et al., 1994).

Purpose of the Study

This study examined the beliefs that technical professionals have about educational pathways and other factors that influence their career development and advancement. This study explored the following:

1. The relationship between education and career progression in a technical field.
2. The experiences of participants transferring technical course work to four-year institutions.
3. The opinions of current technical professionals with regards to their motivation and the barriers they encountered with respect to entry into applied baccalaureate programs.
4. The opinions of current technical students and working technical professionals with regards to whether career progression leads to high earnings and leadership positions.

Methodology

This study utilized a basic descriptive qualitative approach. The qualitative method was used to determine technical professionals' experiences of career progression with respect to career pathways programs. The participant sample for this study was drawn from former CTE students and CTE professionals currently employed in South Mississippi. The data was collected through semi-structured interviews, with structured and unstructured questions.

Definitions of Terms

For the purpose of this research, the following definitions apply:

Academic Pathway - educational pathways for students as a means to close the degree attainment gap for adult, working, female, and underrepresented students (Knowles, Holton, & Swanson, 2014; Ruud & Bragg, 2013).

Applied baccalaureate - The applied baccalaureate program is the extension of formally terminal courses of study, those previously not considered applicable or transferable to four-year colleges and universities. The purpose of the programs is to increase transfer rates from community colleges to four-year institutions (Walker & Floyd, 2005).

Career Pathways - a planned progression of education with several entry level points and several exit level points leading to marketable credentials and economic success (Alliance for Quality Career Pathways (2014).

Career and Technical Education (CTE) - post-secondary academic programs that lead to marketable credentials that support local and regional workforce development (Alliance for Quality Career Pathways (2014).

General education courses - Lower-division courses taken at institutions and in terminal programs that may apply toward applied baccalaureate degrees (Fincher, Kelly, Harrison, Harrison, Hopson, & Weems, 2017).

Transfer degrees - Completed coursework from a two-year post-secondary institution that will transfer to a four-year institution. Usually the student transfers to a four-year institution with an associate of arts or an associate of science degree and about half of the credits they need for a bachelor's degree (Crosby, 2003).

Terminal degrees- Degrees considered terminal or not available at the baccalaureate level are not suitable for applied baccalaureate programs (Walker & Floyd, 2005).

Delimitations

The researcher's choice of population was a delimitation for this study. According to the NCES 2007 report, career technical students are typically female, African American, from a low socioeconomic background, and possess a General Education Development (GED) credential. They are more likely to be considered a non-traditional student because of their age, non-dependent working status, and their delayed enrollment into post-secondary education. They often prioritize their responsibilities as work being more important than school (NCES, 2007).

There are several entry points into career pathways programs for different populations: lower-skilled adults entering through bridge programs; high school students entering through career and technical programs; and military, postsecondary, and apprenticeship students entering through traditional college admissions (Alliance for Quality Career Pathways, 2014). However, this study focused only on participants who entered the pathways programs through the community college system of Mississippi,

which has 15 colleges that award Associate of Science (AS) degrees. In addition, the study was delimited to Mississippi employed CTE professionals. The technical professionals who were asked to participate in the study entered the pathways programs at the community college and completed a technical Bachelor of Science (BS) degree at The University of Southern Mississippi.

Limitations

The following limitations affected the results of this study:

1. Dissimilarities among the population. There was a lack of similarity between the participants in terms of their technical areas of study, attainment of academic credentials and work-related experiences in their technical profession.
2. Self-reported data. According to Podsakoff & Organ (1986), there is no way to validate individual attitudes, opinions and beliefs.
3. Lack of generalizability. Research data lack generalizability if the findings do not apply to other populations (Ferguson, 2004). Interviews were conducted with participants who met the pre-determined criteria. In addition, conducting the study only in the State of Mississippi contributed to the lack of generalizability.

Assumptions

It was assumed that all participants in this study would answer all questions during their interview truthfully. The researcher also assumed that participants would answer questions without intimidation and without fear of negative consequences. All participants were guaranteed anonymity.

Significance of the Study

The study contributes to the understanding of barriers that may have a direct influence on individuals' decisions about continuing their technical education. Further, this study extends the literature on applied baccalaureate programs and the influence of upper-level education on technical professionals' career decision making. Specifically, implications for the results of this study may help to improve policies and procedures for transferring technical coursework, to provide seamless academic pathways for technical students.

CHAPTER II - LITERATURE REVIEW

In today's world, career progression can provide a pathway into social and economic prosperity. However the journey can stall if opportunities for gaining continuing education credentials are limited. In these instances, barriers to career progression for those who are studying and employed in technically driven careers can limit their potential for additional skills in their trade, promotion opportunities on the job and higher earning. To date, very little research has been conducted to identify the motivation for pursuing a four-year degree and barriers that influence technical students' and professionals' decisions to continue their education.

The exploration of the significance of educational pathways on the CTE professional explains the importance of the institutional processes in developing a competitive global workforce. The literature review approached career pathways processes as a commitment from the institution to the individual. This literature review a) explored the significance of career pathways on individuals and institutions, and (b) investigated existing applied baccalaureate programs that are currently in operation to provide CTE professionals with stackable credentials. According to Alliance for Quality Career Pathways (2014, p. 41), stackable credentials are "part of a sequence of credentials" that are essential for career advancement and higher wage earnings. Additionally, this chapter explored a model associated with career pathway success factors and a theory outlining the processes through which students form decisions and achieve levels of education and career choices.

Career Pathways

Even though the educational/curriculum model gained prominence recently, career pathways emerged about 30 years ago (Alliance, 2014). Moreover, educators may contend that this training option existed informally for decades as leaders attempted to meet the diverse needs of students and employers (Stone & Aliaga, 2003). As a workforce development strategy, career pathways programs are designed to increase education and training opportunities to provide an alternative route to occupations and secondary and postsecondary options. In most cases, multiple stakeholders collaborate to develop career pathway programs including secondary and postsecondary institutions, employers, technical and community colleges, social service agencies, and labor associations. The programs offer programs and services to cultivate students' academic, workforce, and technical skills to prepare them for specific career tracks needed in the community (Austin, Mellow, Rosin, & Seltzer, 2012; Hull, 2004). This review provides an overview of career pathways programs, discusses advantages and disadvantages of programs, and shares the Mississippi perspective.

Overview

Career pathway programs vary in length and types of credentials students can earn depending on the setting, partners, and workforce needs. The programs can be stand-alone efforts or included in the curriculum of a college or high school (Austin et al., 2012). The purpose of these programs is to provide academic options and career preparation for particular fields. The academic and vocational programs offered depend on the needs of the region as these programs help fill a void and the economy for future workers and employers. These types of programs are suitable for adult learners including

English Language Learners, students needing academic remediation, offenders/ex-offenders, veterans, high school students, and those seeking alternative scholastic methods (Hull, 2004).

Career pathways programs are often housed at an educational institution (either high school or community/technical college) with community and business partners. Students can tailor the programs to meet their scheduling, academic, and vocational needs (Stone & Aliaga, 2003). The course and scheduling offerings occur online and during the evenings to better serve adult students with other demands on their time, which prevent them from attending classes offered via traditional delivery methods (full time during the day). Students also receive support and training for employment placement and workforce development skills. The programs include multiple entry and exit points that allow students to earn and learn specific skills or a full credential (certificate or degree). Students have the flexibility to enter and exit as they see fit or stop when they achieve a particular goal or milestone (e.g., vocational training or learn a specific skill) (Bragg & Ruud, 2007).

Four essential functions are associated with career pathways programs: student-focused training and education options, non-duplicated assessments, support services, and vocation services and experiences (Bragg & Ruud, 2007). Examples of student-focused training and education options include accelerated and remedial education; from GED to college bridge programs; learning communities; competency-based, contextualized, chunked, or modularized curriculum and instruction; integrated training; self-paced or online instruction; and non-semester or block schedules. Program providers have to maintain consistency and innovative assessments for participants. Institutions should

make the assessment and education process as seamless as possible. Examples of support services include childcare, housing, interpersonal and mental health counseling, and transportation. Examples of vocation services and experiences include workshops (topics include workplace etiquette and teamwork), academic advising, tutoring, leadership development, digital literacy, and career exploration and coaching (Austin et al., 2012; Hull, 2004).

As the number and type of career pathway programs increased in the past decade, institutions and state agencies developed best practices to ensure transparency and efficiency. The following six best practices, or key elements of career pathways programs, emerged: 1) build cross-agency partnerships and clarify roles, 2) identify industry sectors and engage employers, 3) design education and training programs, 4) identify funding needs and sources, 5) align policies and programs, and 6) measure system change and performance (Alssid, Gruber, Jenkins, Mazzeo, Roberts, & Standback-Stroud, 2002). Developing partnerships are essential to successful career pathways programs. Partners can be business owners, college administrators, human services personnel, and adult education providers. All parties involved need to understand the goals of the programs and the specific roles of all partners (not just their responsibilities) in order for the programs to be successful (Hughes & Karp, 2006). To formalize the agreements, most program administrators execute *commitment of understanding* documents to ensure partners are aware of their obligations. Leaders should also identify sectors and engage employers to ensure the curriculum and academic services and programs align with the vocational options students pursue (Alliance for Quality Career Pathways, 2014). This would help educators align the career pathway

programs (education and training) with labor market needs. In order to be effective, career pathway programs need to have a clear plan and curriculum (Alliance for Quality Career Pathways, 2014). The curriculum should include a sequence of courses or credentials and include general education, vocational training, and academic and counseling support services. Due to the nature of involving multiple stakeholders and the unconventional academic model, educators must develop a sound budget to meet the programs' goals and objectives and find sources of funding (tuition, fees, grants, and/or partnerships). With the multiple stakeholders involved, targeting non-traditional students, and alternative scholastic method, administrators of career pathways programs should ensure the policies align with the programs. In addition to the policies meeting the needs of students and future employers, educators also need to consider and address accreditation and state education agency requirements. The administrators should make every effort to provide seamless services in an easy-to-manage format. Assessment is a critical component of every program. Career pathways program administrators should collect and analyze data to quantify the impact the program has on students and employers and to determine if the goals and outcomes were achieved (Alssid et al, 2002; Workforce Strategy Center, 2017).

Advantages and Disadvantages

According to Schulte et al. (2017), career pathway programs are still in an infancy stage and the effectiveness of career pathway model are not being evaluated. However, as with any program or service, advantages and disadvantages exist. The benefits of career pathways programs apply to students, postsecondary institutions, employers, and the community (Hughes & Karp, 2006). According to Hull (2004), this mode of education

allows students to earn college credits; some students do so while still enrolled in high school. Students are allowed to customize their experiences and explore career options first hand while gaining on-the-job-training through real life experiences. High school students who enroll in career pathways programs are more likely to graduate when compared to students overall. Additionally, high school students' transition to postsecondary education is smoother because they were prepared for college level work and expectations (Hull, 2004).

Career pathways programs benefit postsecondary institutions because they offer alternative curriculum models to attract and retain students and students are engaged in their academic program and more likely to remain enrolled to achieve their short and long term goals. Employers benefit from a pool of trained job applicants. Increasing the number of skilled workers allows companies to grow and give hiring managers confidence with their options because the students received academic and onsite training (Hughes & Karp, 2006). These programs also reduce the costs employers incur on training programs. Career pathways programs also benefit the community. Well-trained job applicants are eligible and hired for high-paying positions, which positively impacts the local economy. Residents with consistent employment also have improved quality of life and health care.

Disadvantages of career pathways programs involve paying for the programs, program development, and documentation (Hughes & Karp, 2006). Most students interested in pursuing career pathways programs cannot afford tuition and are not familiar with financial aid programs. Even though they may be interested, they do not think they can afford tuition or believe they lack the ability to forgo employment income for a

period of time to attend school. Despite the unconventional nature of the programs that attract students without a high school diploma or GED, some programs and students do not meet eligibility requirements for federal financial aid (Bragg & Ruud, 2007). As previously stated, career pathways programs offer an alternative method of postsecondary education: students can enter and exit at varying points of the program and may not intend to earn a degree.

Developing these types of programs requires detailed coordination: educators need to possess a keen understanding of the curriculum, regulatory requirements, and workforce skills. Education leaders also need to understand adult learning theory and how to serve students with multiple priorities, understand the need for remedial secondary education, and understand that students have limited time (Hull, 2004). Since some students' goals include acquiring a particular skill instead of earning a certificate or degree, documenting student outcomes is challenging for career pathways program providers, especially when community colleges are under pressure to document student outcomes and increase graduation rates. Some companies expect a certain degree and may not understand how the coursework meets their workforce needs for qualified workers (Workforce Strategy Center, 2017).

The Mississippi Perspective

Several states throughout the country, including Mississippi, developed career pathways programs. The programs in the state support the workforce and academic needs of residents and are coordinated through the Career Technical Education (CTE) agency. The Mississippi Career Technical Education agency implemented the career pathways programs as a means of addressing its mission to prepare students for the workforce in

the 21st century. The programs are offered throughout the state to meet the diverse needs of students and employers in various regions. CTE offers career pathways programs at comprehensive high schools, community colleges, and area career centers. CTE serves 125,680 high school students at 89 public high schools in Mississippi with 8,816 high school students in CTE programs. Within the public community college sector, CTE serves 25,343 students with 25,338 concentrators (Advance, 2018). CTE offers a wide range of programs around 14 of the 16 career clusters. Samples of the Career Clusters include the following: Agriculture, Food, and Natural Resources Career Cluster; Arts, A/V Technology and Communications Career Cluster; Business, Management and Administration Career Cluster, Education and Training Career Cluster; Health Science Career Cluster; Hospitality and Tourism Career Cluster; Manufacturing Career Cluster; and Transportation, Distribution and Logistics Career Cluster. The majors offered through career pathways programs correspond to each of the 14 identified Career Clusters (Advance, 2018).

Career pathways provide a valuable alternative education option for students seeking flexible schedules who want to pursue vocational training. These programs serve students with varying abilities and provide economic gains for citizens and the state or communities. The state of Mississippi developed a comprehensive career pathways program to serve 14 of the 16 regions of the state in areas of technology, education, tourism, and manufacturing.

Applied Baccalaureate Programs

As demand for higher education increases, colleges and universities must develop innovative ways to attract and retain students, particularly in regards to completing

baccalaureate degrees (Hillman & Orians, 2013; Lumina Foundation, 2010). Even though evidence of these programs occurred several decades ago, the curriculum model is evolving as more states adopt the higher education model (Bragg & Rudd, 2007). To this end, colleges (primarily two-year institutions) adopted applied baccalaureate programs to target adult learners and prospective students with prior experiences. Applied baccalaureate programs emerged in response to environmental and external influences such as labor demands and increasing bachelor degree attainment in specific geographic areas (Makela, Ruud, Bennett, & Bragg, 2012). Other goals of applied baccalaureate programs include increasing the educational pathways for students and closing the degree attainment gap for adult, working, female, and underrepresented students (Knowles, Holton, & Swanson, 2014; Ruud & Bragg, 2013).

Present in more than 30 states, applied baccalaureate programs allow students to develop skills necessary for future employment and career advancement (Bragg & Rudd, 2011). The flexible schedules and diverse credit-granting options are well suited for students with varying priorities, including their education pursuits (Khairullina, Valeyev, Valeyeva, Valeyeva, Leifa, Burdukovskaya, & Shaidullina, 2015). Applied baccalaureate programs attract adult students because of their practical nature: these students connect the academic requirements to their career and long-term goals (Knowles, Holton, & Swanson, 2014; Ruud & Bragg, 2013). The next section describes the applied baccalaureate program and the benefits and challenges associated with the academic option.

Overview

Even though it is present at colleges and universities in more than half the states in America, the applied baccalaureate program is understudied by education researchers (Rudd & Bragg, 2011). This curriculum development provides an alternative pathway to baccalaureate degree attainment (Bragg & Rudd, 2011). Even though the curriculum model was implemented during the 1970s, it gained traction in the past decade after reports published by the American Association of Community Colleges (AACC) in partnership with the American Association of State Colleges and Universities (AASCU) (American Association of Community Colleges, 2004; Lumina Foundation for Education, 2007; Lumina Foundation for Education, 2010). These programs are available at both associate and baccalaureate degree-granting institutions. The presence of applied baccalaureate programs at community colleges is attributed to changes in the education landscape where two-year colleges, which historically only conferred associate's or technical degrees and certificates, are now offering a few selective bachelor's degree programs (Jepsen, Troske, & Coomes, 2014; Skolnik, 2016). The development of both the applied baccalaureate and the ability for associate degree-granting colleges to award the bachelor's degree occurred during the 1970s.

Many scholars offered definitions of applied baccalaureate programs (Arney, Hardebeck, Estrada, & Permenter, 2006; Floyd, Skolnik, & Walker, 2005; Walker & Floyd, 2005). The researchers addressed the impact of applying credits earned in two-year programs toward bachelor's degrees awarded at the same institution or colleges and universities with articulation agreements with the community or technical college (Hillman & Orians, 2013). According to Arney, Hardebeck, Estrada, and Permenter

(2006), an applied, “baccalaureate program [is] designed to meet the needs of nontraditional students by allowing technical hours to be transferred for credit to a baccalaureate degree” (p. 184). Floyd, Skolnik and Walker's (2005) definition focuses on community colleges, which also confer bachelor's degrees and use the term applied workforce baccalaureate to describe the credit options and academic programs created to address specific economic demands in a local community, region, or state. Walker and Floyd (2005) defined the applied baccalaureate as academic programs created to tackle specific workforce gaps in areas such as nursing, teaching, technology, and business.

What distinguishes applied baccalaureate degree programs from other bachelor's degree programs is that they target available majors based on workforce needs in the geographic area and academic programs without a clear link between associate's or technical and bachelor's degree institutions (Arney et al., 2006). Degrees considered terminal or not available at the baccalaureate level are not suitable for applied baccalaureate programs (Walker & Floyd, 2005). However, courses taken at lower-division institutions and in terminal programs (e.g., general education) may apply toward applied baccalaureate degrees. Articulation agreements may also be drawn between community or technical colleges and public or private baccalaureate-granting institutions (Fincher, Kelly, Harrison, Harrison, Hopson, & Weems, 2017).

The applied baccalaureate program is the extension of formally terminal courses of study, those not applicable or transferable to four-year colleges and universities. Two-year applied baccalaureate programs include applied or contextual pedagogy and instructional techniques (Walker & Floyd, 2005). These academic programs are often titled Bachelor of Applied Science, Bachelor of Applied Arts and Sciences, Bachelor of

Science Technology, Bachelor of Applied Technology, and Bachelor of Technology. They are designed to develop and enhance students' higher order and critical thinking skills (Fincher, Kelly, Harrison, Harrison, Hopson, & Weems, 2017). Moreover, the programs target adult learners interested in earning a bachelor's degree by starting their academic careers in the technical or community college sector (Floyd, Skolnik, & Walker, 2005). The key to applied baccalaureate programs is the ability for students to continue their academic pursuits to complete a bachelor's degree with credits earned from a two-year institution. In addition to providing a career pathway for students, applied baccalaureate programs increase transfer rates from community colleges to four-year institutions. Institutions with applied baccalaureate programs must work to ensure articulation agreements exist to allow students to seamlessly complete their bachelor's degrees (Walker & Floyd, 2005). "Applied baccalaureate programs help ensure the transferability of technical course credits so that those with applied associate degrees can pursue a baccalaureate degree without penalty and thus compete for jobs that require this degree" (Fincher, Kelly, Harrison, Harrison, Hopson, & Weems, 2017, p. 533).

Also considered the blending of a myriad of curricular models (general studies, liberal arts, and technical or professional education), the applied baccalaureate program allows students to earn baccalaureate degrees with credits earned at specific institutions. The American college curriculum evolved from a few majors/degree programs with the founding of the first college, Harvard, to more than 700 baccalaureate degrees by the 1960s (Rudolph, 1990). The proliferation of majors and degree programs occurred due to changing student demographics, workforce needs, and social expectations (Walker & Floyd, 2005). College attendance and earning degrees became a means of career

advancement instead of an avenue to study classical texts and philosophies (Rudolph, 1990). Beginning with programs in three states during the 1970s, applied baccalaureate programs are now offered in more than 35 states throughout the country, as evidenced in Table 1. There are no further findings indicating any additional state offerings of applied baccalaureate programs.

Table 1 *Applied Baccalaureate Program Offerings*

1970s	1980s	1990s	2000s
Alabama	Delaware	Arkansas	Florida
Missouri	Idaho	Georgia	Hawaii
Illinois	Indiana	Kentucky	Iowa
	Nebraska	Minnesota	Kansas
	Oklahoma	Montana	Mississippi
	Texas	New York	Maine
	Vermont	South Dakota	Nevada
			North Carolina
			North Dakota
			Tennessee
			Washington
			West Virginia

Primarily present at associate or technical degree-granting institutions, applied baccalaureate programs were a driving force in allowing these colleges to award select

bachelor's degrees (Hillman & Orians, 2013). The type of institution granted permission to adopt applied baccalaureate programs and the majors selected for these options depend on market and workforce development trends in the states. Only community colleges in some states (Hawaii, New York, North Dakota, and Washington) are allowed to confer applied baccalaureate degrees. Other states authorize specific community, technical, or baccalaureate-degree granting institutions to offer applied baccalaureate academic programs (Walker & Floyd, 2005). Baccalaureate-degree-granting institutions in Ohio and Oklahoma award applied baccalaureate degrees within the lower divisions of the institutions and allow students to continue their educational pursuits to earn bachelor's degrees.

Types of Applied Baccalaureate Programs

Several types of applied baccalaureate degree programs exist: career ladder, inverse or upside down, management ladder, completion, and hybrid degrees (Ignash & Kotun, 2005). Each of these program types is available at two and four-year institutions. Career ladder programs include a significant proportion of course credits earned within the technical major. These programs entail Bachelor of Applied Science degrees: they emphasize technological fields and usually prepare students for licensure exams (Arney, Hardebeck, Estrada, & Permenter, 2006). Conversely, the inverse or upside down programs, usually called Bachelor of General Studies, Bachelor of Professional Studies, or Bachelor of Applied Studies programs; include the requirement for students to satisfy the baccalaureate degree requirements at the associate degree level and take general education courses during later years of their academic tenure (Floyd, Skolnik, & Walker, 2005). Management ladder degrees were developed to offer students applied management

skills to prepare them for managerial positions. The program offerings complement technical skills and expand upon AAS and AAT degrees. Degree programs offered via this method include respiratory therapy and technology (Ignash & Kotun, 2005). The completion model includes a liberal arts focus and students usually earn Bachelor of General Studies degrees (Ruud & Bragg, 2013). Finally, the hybrid model is a combination of the four program types. Faculty members develop the curriculum based on the degree program and postsecondary needs (Ignash & Kotun, 2005).

Table 2 Applied Baccalaureate Program Models

Career Ladder	Upside Down	Management Ladder	Completion	Hybrid
Technical course emphasis/priority	General education emphasis/priority	Business and management skills focus	Liberal arts/studies focus	Blend of other models based on degree program

Applied Baccalaureate Benefits

Several benefits of applied baccalaureate programs are evident. The benefits include increasing the number of trained potential employees in the state or region, increasing the number of bachelor's degree recipients, enrolling underserved populations, and contributing to personal development (Walker & Floyd, 2005). In many cases, applied baccalaureate programs were generated to meet workforce demands. The types of academic programs created include technical programs such as health care and technology. More educated and trained prospective employees are also more likely to earn a living wage that may even support a middle-class lifestyle (Jepsen, Troske, &

Coomes, 2014). The applied baccalaureate programs are developed based on input from the business community and resources available at the institution (Walker & Floyd, 2005). Applied baccalaureate programs are also opportunities to increase bachelor degree attainment rates, particularly among adult learners (Knowles, Holton, & Swanson, 2014). These programs also focus on STEM education, disciplines sought after to support several industries (medical, technology, construction, etc.). Even though educators and other stakeholders were committed to increasing enrollment rates and credits earned, degree completion is an overarching goal for applied baccalaureate programs (Skolnik, 2016). The curriculum and course schedules are often targeted to adult students' needs, with online and evening courses. The articulation agreements with baccalaureate-degree-granting institutions usually include all of the credits earned at the community or technical college or lower level courses at four-year institutions (Makela, Ruud, Bennett, & Bragg, 2012). Diverse and non-traditional (adult-learner, first-generation, and rural) students are attracted to applied baccalaureate degree programs. These programs serve as the gateway for students with limited exposure or access to four-year institutions and the inability to relocate for higher education opportunities (Walker & Floyd, 2005). The ability for students to seamlessly transition from a two-year to a four-year program while paying lower tuition and fees for the first two years of study are other benefits for underserved students. First-generation and adult-learner students are often price conscious about higher education decisions (Rudolph, 1990). Graduates of applied baccalaureate programs are likely to contribute to their communities, develop a sense of lifelong learning, and launch careers instead of securing jobs (Ruud & Bragg, 2013). They spend time volunteering or serving in their communities, continue their education

(formally or informally), and seek career advancement or explore entrepreneurial endeavors (Rudolph, 1990).

Applied Baccalaureate Challenges

Challenges of applied baccalaureate programs include lack of course credit transferability to institutions other than those within the articulation agreement, low enrollment/interest, faculty involvement/perception, and mission creep among institutions that typically award two-year degrees (Walker & Floyd, 2005). States, especially those with high college-going and completion rates, experienced challenges for students who wanted to transfer to institutions not listed on the articulation agreement (Ruud & Bragg, 2013). To combat this issue, educators in states such as Montana focused on the general education requirements and developed an upside down/completion model for the applied baccalaureate programs (Walker & Floyd, 2005). The applied baccalaureate degrees usually are not transferrable if students elect to change their degree courses of study (Arney, Hardenbeck, Estrada, & Permenter, 2006). Many institutions develop applied baccalaureate programs when enrollment drops, in hopes of attracting new students. However, the addition of the program often fails to meet enrollment targets. Perspective students may not be aware of or understand the new model. The programs offered might attract businesses but not pique student interest (American Association of Community Colleges, 2004). Faculty members contribute to the curriculum and may be apprehensive about adopting a new model. If faculty members at the two-year or baccalaureate-granting institutions do not understand the model or oppose its implementation, the program may suffer (Stark & Lattuca, 1997). The models are often developed to attract a particular student demographic, such as military or working students, without

understanding the needs of the population and how the program would meet their needs (Walker & Floyd, 2005).

Community and technical colleges often hire faculty members with master's degrees. The addition of bachelor's degrees may pose a problem for faculty who did not earn terminal or doctoral degrees and lack the ability to provide baccalaureate-level instruction (Lorenzo, 2005). Opponents of applied baccalaureate programs contend they contradict the mission of most community and technical colleges. The mission creep associated with adding or promoting bachelor's degrees may be considered a slippery slope of departing from the mission and vision of these types of institutions (Walker & Floyd, 2005). With open admission requirements, students may not be prepared for the rigors of baccalaureate degree programs but possess the necessary skills for lower level courses (Ruud & Bragg, 2013).

Theoretical Framework

The theoretical framework for this study is based on the Alliance for Quality Career Pathways Framework and Social Cognitive Theory.

Alliance for Quality Career Pathways Framework (AQCP)

A study on technical professionals' career pathway progression benefits from a focus on The Alliance for Quality Career Pathways Framework (AQCP). In July 2012, the framework was funded by the Joyce Foundation, the James Irvine Foundation, and the Greater Twin Cities United to provide a uniform approach for ten leading career pathway states to develop a system to strengthen all types of career pathways across the United States. The career pathways advisory group members from each state are affiliates of local community colleges, career ladder programs, labor and workforce education

centers and vocational high schools (Alliance, 2012). This framework is a quality system of shared communication through using definitions and models, evaluation processes, and accountability and continuous improvement among all stakeholders (Alliance, 2012).

The significance of AQCP is to strengthen educational career pathways and impact community workforces and education and training throughout the United States. Today, the AQCP framework serves as a qualifier for a variety of existing pathways. The shared framework has been useful for the development of career pathways for veterans, lower-skilled adults, disconnected youth, apprenticeships, and – for the purpose of this study – career and technical education programs (Alliance, 2012). Further, it is beneficial to state, local and regional institutions of higher education to assure levels of proficiency associated within career pathways partnerships, policies, funding, and data measures.

For this study the three fundamental features of AQCP that are also defined through the Carl D. Perkins Career and Technical Education Act of 2006 focus on continuous trajectories of academic opportunities through multiple entrances and exits. According to AQCP (*see Figure 1*), the fundamental features of quality career pathways are well-connected and transparent education, multiple entry points to education, and multiple exit points (2012).

Well-connected and transparent education.

Employers and higher education institutions connect through training, support services, and credentials to meet workforce needs, build communities, and strengthen the economy. Figure 1 provides a visual portrayal of this well-connected and transparent education concept. It describes the flow of educational opportunities available for different participants from the accessible workforce systems through four-year degree. As

participants advance through their path, support services are available to assist with their attainment of labor market credentials. There are also employment opportunities along the path for those who are interested in employment. Most importantly, every phase is structured to lead to the next phase and the path can be tailored to adjust to life circumstances for the individual.

The overall importance of any career pathway is to develop a workforce, through education and training. According to AQCP, a well- connected and transparent career pathway identifies and connects the human capital demand of industry to education and training throughout communities (Alliance, 2012). The importance of aligning education, support services and employers is to cohesively provide opportunities for credentialing pathways for individuals.

Multiple entry points and exit points.

To offer a solution to the uncertainty of life circumstances, career pathways are flexible, by providing multiple entry and exit points. According to AQCP, a good career pathway plan has provisions for individuals from a variety of backgrounds with different levels of knowledge and education (2012). Further, they align educational offerings that are tailored to fit the knowledge of the individuals, by providing several entries to the pathway. According to AQCP, a lower-skilled individual may enter through a workforce system, a high school student may enter through a career and technical program, and a traditional student may enter through a two-year or four-year institution, but they all have the same opportunity to increase skills and earn credentials. To illustrate the point, a community and technical college in Minnesota created a pathways program with several admissions methods to capture an all-inclusive academic community. There were

individuals entering programs with low skills and abilities, high school students, and traditional college students (Alliance, 2012). A fluid and flexible plan should include an educational system that provides opportunities to earn credentials through training and support services.

An additional aspect of the entry points and exit points feature is that it addresses a specific need or desire of the participant. The points range from basic to advanced, and it depends solely upon the potential and ability of the participant. The participant can enter and exit seamlessly, with support and a clear understanding of their next possibility. The AQCP model is used to determine what this study intends to measure for the state of Mississippi career pathways.

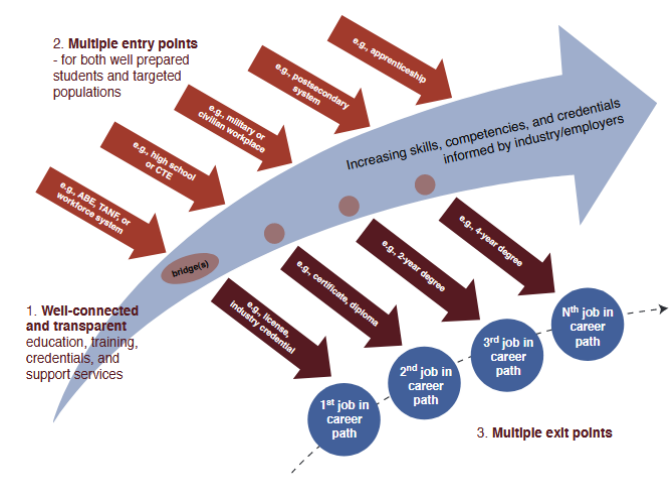


Figure 1. Alliance Quality Career Pathways Model (reproduced with permission)

Although the focus of this study was on adults and out-of-school youth, it can be used to benefit a variety of career pathways programs (Alliance, 2012). This study explored quality career pathways and how well the system performs regarding participants' success in Career and Technical Education (CTE) Programs of Study. Additionally, it focused on educational pathways bridging two-year technical education

programs to the four-year education system and the workplace. All the CTE programs in the United States are governed by the policies and standards set forth within the Perkins Act. At the secondary level, the Perkins Act has served as the framework for assessment of CTE programs; however, the AQCP framework helps career pathways partners, funders, and practitioners in the field better understand the role of career pathways programs in society.

Social Cognitive Theory

Social Cognitive Theory, in general, is robust and consists of many facets, one of which is Social Cognitive Career Theory (SCCT). The current study is based on three factors of the Social Cognitive Career Theory: opportunities, barriers, and supports. The purpose of this study was to explore the perceptions of professionals working in Southern Mississippi in a technical occupational field. According to Hays et.al (2015), the SCCT model can be used to understand attitudes, experiences and outcomes – including how to positively influence those outcomes. As part of SCCT, Raque-Bogdan, & Lucas (2016) referred to how educational and career development self-efficacy is positively correlated with outcome expectations.

A review of the literature revealed several relevant studies for which SCCT served as the framework. For instance, in research conducted by Ali & Menke (2014) on social cognitive career theory and youth career development, students reported higher perceptions of the likelihood of encountering barriers and having higher vocational skill self-efficacy as a result of their CTE profession. No significant difference emerged regarding students' perceptions about the difficulty associated with overcoming barriers, having outcome expectations about career decisions, and having career aspirations. The

following factors contributed to outcome expectations: issues concerning ethnicity, difficulty overcoming barriers, and likelihood of encountering barriers. Perceptions of difficulty in overcoming barriers were negatively associated with outcome expectations at a significant level. A positive and statistically significant correlation emerged between the likelihood of encountering barriers and having outcome expectations. A negative relationship was reported regarding vocational skills self-efficacy and difficulty overcoming barriers. No significant differences emerged related to predicting career aspirations.

In relation to professionals in the workforce, SCCT can be used to account for numerous decisions individuals make that affect their professional life. Researchers have examined SCCT as it relates to career counseling (Lent, 2005), barriers to career choice (Lent et al., 2000), career training (Lee & Hogg, 2009), and many other subjects.

Lee and Hogg (2009) examined the “issue of learning and development for new graduates in their early career” (p. 267). They discussed SCCT and people’s actions and goals. Citing Lent (2005), Lee and Hogg (2009) wrote that according to SCCT, “the model proposes that people are more likely to take actions to achieve their goals if they have access to environmental (organizational) support and resources relevant to the pursuit of these goals” (p. 269).

Citing the concept of individual influence on career success, Lee and Hogg (2009) discussed the model of proactive behavior and how it “indicates that an individual’s disposition or personality will influence the extent to which they take the initiative to engage in career management behaviors and achieve career satisfaction” (p. 269).

Utilizing this proactive model, they see that that an individual's own actions affect employability (Lee and Hogg, 2009).

In addition to decision making, actions, and goals, SCCT has been utilized to examine difficulties of overcoming obstacles, as well as the likelihood of encountering barriers as factors contributing to career perception. Cunningham, Doherty, and Gregg (2007) used SCCT to examine female assistant coaches' intentions regarding head coaching positions. The authors used SCCT to investigate women in coaching, within a male dominated field. Cunningham et al. (2007) used the theory to explore the influence of gender on intentions. The researchers sought information through a questionnaire (collecting demographics, as well as data related to SCCT) submitted to 66 assistant coaches (35 men and 31 women) from 15 different sports in the Ontario University Athletics League (Cunningham et al., 2007). The authors developed six hypotheses to guide this study to assess interest and intention surrounding coaching, head coaching aspirations as an outcome expectation, and perceived success and barriers based on gender (Cunningham et al., 2007). The following results emerged after the data analysis: Male participants reported higher vocational interests and choice goals regarding head coaching positions, conveyed greater self-efficacy in the head coaching arena, and perceived more positive outcomes expectations than their female counterparts (Cunningham et al., 2007). However, the researchers found no difference existed regarding negative outcomes expectations for participants from both genders and significant differences among participants from both genders were not evident in regards to supports and barriers (Cunningham et al., 2007).

In addition to being applicable to career intentions, SCCT has also been used to explore employment perceptions among adults facing hardships. Dahling, Melloy, and Thompson (2013) examined employment perceptions among adults experiencing financial hardship and unemployment. Acknowledging regional unemployment rates as a factor, Dahling, Melloy, and Thompson used a survey to acquire responses from 221 unemployed U.S. adults across 42 states. Specific measured variables included the following: job search self-efficacy, job search outcome expectations, and future search goals (2013). Dahling, Melloy, and Thompson (2013) wrote that the results from their study “extend research on SCCT’s theorized pathways by demonstrating that the individual-level, perceptual affordance of financial strain interacts with the objective, societal affordance of regional unemployment rate in relation to JSSE, JSOE, and job search goals” (p. 214-215). They (2013) note that their research highlights the “importance of considering both subjective and objective measures of affordances in SCCT in future research” (p. 216).

SCCT has also been employed to examine students’ interests and major selections in college. Inda, Rodriguez, and Pena (2013) used SCCT to predict male and female engineering and technology students' interests and major selection (and explore their goals and outlooks), utilizing SCCT’s components of self-efficacy beliefs and outcome expectations. The study included 579 (163 females and 416 males) second-year engineering students enrolled at the University of Oviedo (Spain), with ages ranging from 18 to 37 years old (Inda et al., 2013). The research included six hypotheses, comparing male and female participants' scores on the SCCT model to perceptions about their

education and career paths -- addressing gender as it relates to Social Cognitive Career Theory and the various types of contextual supports and barriers (Inda et al., 2013).

Inda et al., 2013 shared several results: The self-efficacy reported by male and female students based on their interests in engineering and technology fields was determined to influence the outcome expectations regarding interests and academic goals for both groups. Moreover, contextual support and barriers were directly affected by self-efficacy outcomes for both groups. They also stated there was a significant difference between self-efficacy beliefs: male participants exhibited more confidence about completing their degrees (than female participants) and were also more interested in academic and scientific activities outside of the responsibilities associated with their majors. However, no differences existed between male and female participants in the area of contextual barriers and support (Inda et al., 2013). The authors concluded the SCCT model accurately predicted the academic and professional experiences of male and female engineering students, self-efficacy was linked to expectations and goals, perceptions about contextual support and barriers were influenced by self-efficacy beliefs, and gender differences included the types of barriers and the level of self-efficacy associated with pursuing an engineering or technology degree (Inda et al., 2013).

Many researchers used a college campus to accomplish their research goals. Michel, Hays, and Runyan (2015) used SCCT to explore attitudes and behaviors of U.S. faculty members working with male students in the female-dominated counseling field. They completed a qualitative analysis looking at three factors of SCCT: opportunities, barriers, and supports (Michel et al., 2015). Seeking to fill a gap in research literature, they chose to study faculty working with men, in what is often seen as a primarily female

profession. Their sample, 168 counseling faculty members (86 female and 82 male), broadly represented various racial and ethnic backgrounds, differing ages, various academic ranks, different geographic regions, and diverse institutions (Michel et al., 2015). Different than many other research studies, Michel et al., 2015 asked participants two open-ended questions to collect their data. They found themes within opportunities included the presence and/or absence of male and female privilege (the presence of male privilege was the most prevalent theme in this category) and no significant difference between male and female faculty members' perceptions about female privilege (Michel et al., 2015). Within the barriers theme, the following categories emerged: presence or absence of perceived gender specific barriers, gender-neutral barriers, traditional role beliefs, and non-traditional gender role beliefs (Michel et al., 2015). Additionally, they found more male (24) than female (16) participants mentioned power held by women; however, no statistical difference emerged regarding male and female faculty members' perceptions about female privilege. Categories within the supports theme included universal support strategies, gender-specific strategies, and absence of support strategies; no significant difference emerged among the support strategies and the ability to retain female or male students (Michel et al., 2015). Based on the findings, Michel et al., (2015) state the SCCT model can be used to understand faculty members' attitudes about male students' experiences and how to positively influence their academic outcomes and that even in female-dominated fields, male privilege exists, and female privilege is not a factor (2015).

SCCT's applicability does not stop on the college or university campus.

Wohrmann, Deller, and Wang (2013) used SCCT to explore the effects of outcome

expectations for people in post-retirement. The researchers were guided by multiple hypotheses, including correlations between: 1) post-retirement outcome expectations and post-retirement planning activity, 2) post-retirement outcome expectations and same-employer-post retirement work intention, 3) same-employer-post-retirement work intention and post-retirement work planning activity, 4) post-retirement work outcome expectations and post-retirement work planning activity, 5) physical demands and same-employer-post-retirement work intention, 6) physical demands and outcome expectations and same-employer-post-retirement work intention, 7) social support at work and same-employer-post-retirement work intention, and 8) social support at work and outcome expectations and same-employer-post-retirement work intention (Wohrmann et al., 2013). Participants included 1,065 German employees (ranging ages 45-65) who completed an instrument to assess post-retirement work outcome expectations, physical demands, social support at work, same-employer-post-retirement work intention, and post-retirement work planning activity (Wohrmann et al., 2013). Wohrmann et al., (2013) found positive and significant correlations emerged for the following variables: outcome expectations and post-retirement planning activity and intention to work with the same employer in retirement, intention and planning activity, physical demands and post-retirement work planning activity, and social support at work and intention; negative and significant correlations emerged for the following variables: physical demands and intention and social support at work and post-retirement work planning activity. The researchers did find age was positively associated with post-retirement work planning and intention, living with a partner was negatively correlated with intention, and post-retirement work outcome expectations were positively correlated with post-retirement

work planning activity. They also found outcome expectations were positively correlated to intention, intention was positively correlated to planning, physical demands were negatively correlated with same-employer-post-retirement work intention, and social support at work was not correlated to intention (Wohrmann et al., 2013).

In essence, SCCT has been widely used to examine many career factors of professionals around the globe, including working professionals and technical professionals. In many jobs and industries, there are many factors that determine employees' ability to advance. These include academic credentials, as well as environmental support and perceived and actual barriers. Therefore, AQCP framework and SCCT theory together provide an understanding of the structural factors of career pathways and CTE students' perceptions of institutional barriers.

There are many career pathways to moving up the corporate ladder. Just as Inda et al. (2013) used SCCT to predict male and female engineering and technology students' interests and major selection (and explore their goals and outlooks), the theory can also be used to examine relationships with advisors, teachers, and professors who assisted others in their educational endeavors, as well as helped to removed physical barriers or to provide opportunities, such as the chance to easily transfer earned credits and coursework. Students' experiences widely vary when going through their educational plan; their motivation and desire to succeed also varies. SCCT can be used to examine the factors that affect progression and ultimately opportunities for financial, as well as career, advancement.

Summary

This chapter offers a review of the literature supporting the need for clear paths for CTE professionals to transition from education to employment. The need for a talented workforce to ensure global competitiveness offers insight for the need of effective career pathway programs for individuals who desire technical employment. The presence of applied baccalaureate programs increased during the past four decades (Hillman & Orians, 2013). The curriculum model attracts adult learners and students from underserved groups. Applied baccalaureate programs aim to increase college enrollment and graduation rates and meet the workforce development needs in a state (Bragg & Rudd, 2011). As with many educational initiatives, benefits and challenges exist for applied baccalaureate programs (Ruud & Bragg, 2013).

CHAPTER III - METHODOLOGY

The purpose of this study was to explore technical professionals' perceptions about educational pathways in the state of Mississippi and other factors that influence their career development and advancement. This study explored the following:

1. The relationship between education and career progression in a technical field.
2. Participants' experiences of transferring technical course work to four-year institutions.
3. The opinions of current technical professionals with regards to their motivation and the barriers they encountered with respect to entry into applied baccalaureate programs.
4. The opinions of current technical students and working technical professionals with regards to whether career progression leads to high earnings and leadership positions.

Research Methodology and Design

This study involved a qualitative approach to understand CTE professionals' lived experiences with career pathways programs in Mississippi. According to Creswell (2013), qualitative research is an appropriate method to use to determine individuals' and groups' in-depth understanding of their experiences. The qualitative study allows the researcher to investigate the "inner experience of participants" (Corbin & Strauss, 2008, p. 12), by allowing the researcher to focus on the *why* rather than *who* and *what* questions to address various phenomena (Given, 2016).

Interpretative Phenomenological Analysis (IPA) was used in this study. IPA is informed by hermeneutical phenomenology and idiography. First, according to Creswell

(2013), phenomenological researchers look at the *essence of experience* to gather a thorough understanding of individuals from their own context. This approach provides “a fresh, complex, rich description of a phenomenon as it is concretely lived” (Finlay, 2009, p.6). Second, hermeneutical phenomenology is interpretation of the descriptive experiences by the reader (Creswell, 2013). Therefore, there is a relationship between what has been lived and the underpinning of the experience. Finally, idiography focuses on understanding the details in a specific context (Smith & Osborn, 2015).

According to Creswell (2003), the psychologist Moustakas (1994) identified a four-step, systematic approach to conducting phenomenological research. The four steps in the approach are as follows: epoche, phenomenological reduction, imaginative variation, and synthesis of meaning and essence. The initial step, epoche or bracketing, allows the researcher to envision the reality of the phenomenon being studied free of personal biases and preconceived notions. The lack of subjectivity on the part of the researcher creates an “approachable presence” from the interviewee’s perspective. This is the point when the researcher obtains insight into the participant’s perspective. The second step includes the use of “phenomenological reduction,” which isolates the phenomenon for scrutiny. Basically, the structure of the phenomenon is examined during this step: “Isolation occurs through horizontalization, – the process of putting forth the data for examination. The data is then organized into clusters of themes” (Moustakas, 1999). During the third step, the researcher uses imagination variation analysis to categorize themes from the descriptions of the participants’ experiences. During the last step, the researcher uses “phenomenological inquiry” to examine human experiences and obtain knowledge regarding those experiences (Moustakas, 1994).

Data Collection

The researcher collected data through conducting semi-structured interviews with career and technical (CTE) professionals working throughout the state of Mississippi.

The semi-structured interviews allowed the participants to speak openly and share additional details, if desired. Interview questions were based on the following three research questions: 1). What is the relationship between proposed career pathways for technical professionals and career development of technical professionals? 2). What are technical professionals' opinions with regard to the motivation and the barriers they encountered with respect to entry into applied baccalaureate programs? 3). What are technical professionals' opinions with regard to whether CTE degrees lead to further education and improved employment opportunities to achieve economic success?

The data was gathered through telephone interviews. After approval, the researcher used an audio-recording device to effectively record the interviews. Interviews were transcribed for analysis. According to Creswell (2013), telephone interviews are practical, but they do not allow for the researcher to observe the informal communication and body language. However, telephone interviews are an effective way to minimize costs to the researcher and limit the inconvenience for participants, such as time and travel. Further, for this study the researcher applied a responsive interviewing style. According to Rubin & Rubi (2005), this data collection method allows the researcher to receive in-depth knowledge about the perceptions of the participants' experiences.

Population and Sample

This study used a nonprobability sampling strategy known as purposeful sampling. According to Merriam & Tisdell (2015), nonprobability sampling is the most

appropriate method for qualitative research. Further, *purposeful sampling* allows the researcher to implement subjective selection to obtain a range of participants that represent a sample of the population. For example, if the participants attended a different community college, if their technical area of study was different, or if they work in various industries, the researcher would be able to collect a more representative sampling.

This study employed criterion sampling and snowball sampling. According to Creswell (2013), validity increases when sample methods are combined. Criterion sampling requires participants to meet predetermined criteria. To be considered for the study, participants needed to be CTE professionals who began their career pathway at a Mississippi community college and who had completed an Applied Baccalaureate degree at a four-year institution in Mississippi. The targeted population represented a demographic that has a technical degree that has historically been considered a terminal degree. The participants for the study were identified through The University of Southern Mississippi Alumni database. The sample size is also a criterion. According to Creswell (2013), qualitative studies do not require a set number of participants for a study; however, the sample size was contingent upon the design of the study. For this study, in which a phenomenology approach was employed, the sample size included ten to twelve participants (Creswell, 2013).

Snowballing was identified as a secondary method to access the target population if the first method failed to identify enough willing participants. The use of snowball sampling in this study was not implemented. Similar data, resulting in data saturation, received from twelve participants provided the researcher with enough data to fully

understand the essence of the participants' experience as a career and technical professional.

Procedure

The Institutional Review Board of The University of Southern Mississippi approved this research. Following the approval, an email correspondence was sent to 125 Applied Technology alumni inviting them to the study and providing them with the study criteria and an explanation of anonymity. Due to the lack of responses to the initial email participation during the first two weeks, a second invitation was e-mailed to the same participants and during this attempt, the two pilot participants were identified and interviewed. Within one week of sending the second email invitation, the researcher sent the same 125 Applied Technology alumni text messages inviting them to participate in the study and requesting them to review their email with the study criteria and consent form. Potential participants consented through text- messaging and scheduled their telephone interview. The researcher called the participants and during the initial telephone conversation, the participants verbally agreed to participate in the study.

Pilot

The researcher conducted a pilot study to test the eleven question interview protocol (See Appendix D) instrument for accuracy and to determine if the research questions explored the experiences of CTE professionals' perceptions of their career and technical education and career progression. Further, the pilot was used to test the functions of the telephone recording application and video conferencing tool which were the two options that were available to participants as ways to interview. According to Turner (2010), pilot participants should be comparable to the sample of the study. While

the pilot study included two participants who did not meet all the criteria, the two pilot participants are applied baccalaureate graduates, as well as, currently employed in CTE in the state of Mississippi. Even so, at the recommendation of the two pilot participants, interview questions were changed for clarity and more prompts were added to gain more detail descriptions of their experiences.

Data Analysis

The data analysis plan for this study involved the use of interview notes and transcripts from the interviews with CTE professionals in the state of Mississippi. The researcher used Corbin & Strauss's (2008) three-phase process to analyze the qualitative data: data reduction, data display, and conclusion drawing.

Data reduction is the first phase of data analysis. *Data reduction* refers to a systematic process of selecting, focusing, simplifying, abstracting and transforming data that is derived from notes and transcripts. The researcher read the data collected from semi-structured interviews/transcripts. The researcher marked the data relevant to the questions or issues asked, regarding CTE career pathways and career progression. Finally, the researcher reviewed and systematically coded the interview notes and transcription files. Consistent with the qualitative methodology of Corbin & Strauss (1990), variables were assigned specific codes to be used when transcribing and coding the interviews. Further data codes were developed and assigned to words and phrases used by participants for which a classification code did not exist.

During the final data analysis phase, the researcher used the data displays to draw conclusions about the CTE professionals' perceptions of career pathways on career progression. The interview data was organized, accurately coded, and summarized to

identify predominant themes. Furthermore, after the interview data was displayed in a systematic and efficient way, the researcher drew conclusions based on the themes uncovered, and discuss findings in light of the conceptual framework.

CHAPTER IV – RESULTS

Research shows career pathway programs yield positive results in relation to higher education and improved employment opportunities (Hughes & Karp, 2006). Additionally, there is a rising interest in providing quality career and technical career pathways to and through post-secondary institutions throughout the United States (Offenstein, Moore, & Shulock, 2009). The purpose of this study was to gain an understanding of the essence of participants' career technical educational (CTE) pathway experiences. Furthermore, the study sought to explore the influences of academic attainment on progression in their career pathway and on professional growth.

During this phenomenological study, individuals who are considered career and technical professionals shared their lived experiences as participants in CTE career pathways programs in Mississippi. The participants in the study shared their perceptions of the value of CTE pathways and the influence of the CTE career pathways to their career progression. The goal of this chapter is to present the results of the study. To begin, a description of the interview experience and demographics of individual participants is presented. Next, the chapter includes an analysis of the participants' narrative responses to eleven interview questions (Appendix B). Further, the chapter will present findings based on sub-themes and major themes developed from the researcher's use of the interpretative phenomenological analysis step-by-step approach.

Interview Experience

Setting

Twelve CTE professionals voluntarily agreed to participate in the study. The inquiry method used semi-structured interviews that were conducted through telephone.

The researcher provided flexible options for interview date, time, and form to meet their demanding schedules. All participants selected interviews via phone as opposed to the video conferencing option presented. Interviews occurred at different times, mostly late evening, while participants traveled from work, while at work, while preparing dinner, or during a time that they could fit in their busy schedule. On average, each interview lasted thirty minutes.

Participant Demographics

Interviews were conducted with twelve CTE professionals. Participants had attended various local community colleges, had obtained various career and technical degrees (ex: business, technology and engineering, automotive, logistics, graphic design), and on average had worked in their career field for 11 years. Table 2 details the participants' demographic data. All participants had at some point experienced career pathways in Mississippi by first entering through a two-year community college and being employed or self-employed in the state of Mississippi.

Table 3 Demographics

Participant	Community College	Technical Profession	Years in Profession
(P1)Brune	Mississippi Gulf Coast Community College	Electronics Engineering Technology	12 yrs
(P2)Bradshaw	Jones County Community College	Automotive Technology	19yrs

Table 3 Continued

Participant	Community College	Technical Profession	Years in Profession
(P3)Reed	Pearl River Community College	Business Office Technology Computer	5yrs
(P4)Shoemake	Jones County Community College	Information Systems Technology	7 yrs
(P5)Branch	Hinds Community College	Diesel Equipment Technology	18yrs
(P6)Bourgeois	Pearl River Community College	Instrumentation and Electronic Engineering	8 yrs
(P7)Staten	Meridian Community College	Graphic Design Technology	4 yrs
(P8)Head	Mississippi Gulf Coast Community College	Marketing Management Technology	8yrs
(P9)Duong	Mississippi Gulf Coast Community College	Database Administration	12yrs
(P10)Nungesser	Mississippi Gulf Coast Community College	Logistics Technology	28 yrs
(P11)White	Jones County Community College	Networking and Technology	12yrs
(P12)Hudson	Pearl River Community College	Business Office Technology	3yrs

Findings

Following, the findings from participants' interview responses are outlined according to the research questions and relevant sub-themes are presented describing the various elements of their academic and career progression experiences and the context in which they occurred. The interview process began with focusing on Question 1: *What is the relationship between proposed career pathways for technical professionals and career development of technical professionals?* The sub-themes that were identified for this question included: (a) career pathways perceived through self-discovery; (b) career

pathways perceived through others; and (c) career pathways for others. Participants reported experiences about their career pathways and career development that described elements related to self-discovery/self-interest, guidance, support, and training on career pathways primarily through others, and knowledge of other career pathways.

Knowledge of career pathways primarily through self-discovery/self-interest

When asked to identify their main source of information about career pathways, all participants cited that their career pathway foundations were inspired through self-interest or exploring career options. Specifically, six out of the 12 participants reported that their initial introduction was derived from their interest, online research of the career, and or visiting the community college. In particular [P1] “...*through online. Through the internet.*” According to [P5], “I went the path I did because there were certain jobs I didn’t want. I had to...go to school to achieve the degree program or whatever, to have a piece of paper that said you graduated with a four-year paper.” Additionally, [P8] expressed a decision made based on interest in a particular field, “*It took me a while, I think, to find my career path because as I was starting community college I knew I wanted to do something involving computers.*” Finally, the self-motivation of two participants drew them to take advantage of free online training open to the public through FEMA [P1] as well as take courses to gain knowledge in a field (diesel equipment technology) that was perceived difficult for many and therefore would set him apart from others [P5].

Guidance, support, and training on career pathways primarily through others

Guidance toward career pathways were gained through the influence of family members and through word-of-mouth communications with co-workers and instructors or

counselor in their program at the institution they attended. One participant's response encompassed all of the sources shared by participants about how they came to gain knowledge about their career technical pathway. According to [P2], his decision to pursue an automotive technology career was based on:

My dad was a sewing mechanic, and my grandfather was a farm mechanic...I also through word of mouth, through the Jones...I have a family member who went through the program at Jones and he really spoke highly of it, and that's what I wanted to pursue, so that's what ultimately made me decide to go to Jones and the recruiting, Mr. Looney, he was one of my instructors and he came and was recruiting me at the vocational center that I went to school at. And I really liked a lot of the stuff he said about the program.

Another participant shared that while working in her current field for many years she was unaware of a career pathway and was content with just having a job until a co-worker (department manager) suggested that she return to school and enter a 2-year logistics program. In addition to also reporting influences from co-workers, six students reported that upon enrolling in a community college, knowledge about a career and technical career pathway further occurred through conversations with CTE instructors.

For example, [P6] stated *"I actually learned more about it through the counselor at Pearl River,"* and [P3] responded *"Well, the way I heard about it was because at the time the teacher that I was taking a lot of classes, she recommended me into the program, Business Office, and that's how I got in there."* In a similar way, though at the high school level, [P2] included in his response that he was initially introduced to his career

path while in the ninth grade and attending a career discovery program which aligned his likes and dislikes with particular career paths.

With regard to support and training received to direct participants in their career pathway, most acknowledged their workplace and program instructors as resources. According to [P10], information about new programs that aligned with her career field were presented at lunch-and-learn events held at her workplace and discussed the benefits of having a degree in the field. Furthermore, [P10] stated *“we were told that once we received our degree, we could get a promotion in our field.”* One participant [P6] reported that upon attaining the two-year degree and gaining employment, he received advanced technical on-the job and online training through his employer. Six participants described guidance they received from instructors about what it would take to succeed in the field and the necessary certifications to acquire, how to attain them, and the different career option pathways that can be pursued with those credentials. This resulted in some participants gaining promotions or advancing in their jobs after attaining the degree. One exception reported in regards to career progression was expressed by [P11] saying, *“unfortunately in our area at [institution] and [department], there’s not really a career path documented as far as progression. So we are required to pretty much make our own way.”*

Knowledge of other career pathways

Next, the participants responded to the research question “What do you know about educational career pathways for individuals with a technical degree/profession outside of your own personal experiences?” The majority, 11 out of 12 participants felt that they did not have specific knowledge of other career and technical professions

outside of their own. Although, two of the participants could provide general advice to others about a CTE career pathway, citing: [P6] *“I think the best thing to do is to kind of pinpoint a certain industry that you want to be in, whether it be oil and gas, air space, power utility, business.”* and [P7] *“I would even suggest going to a community college first. And after that look at a four-year university and research their programs.”* Further, one participant, a CTE instructor, shared detailed advice on CTE career pathways. He shared thorough knowledge about specific career fields under the umbrella of Industrial Service Industry CTE Pathways. He also suggested that several Mississippi companies want to hire a technically skilled workforce in such areas as automotive technology, civil engineering technology, and CAD design.

Table 4 Theme: Advisement as a foundation

Sub-themes	Elements(# of participants)
Career pathways perceived through self-discovery	<ul style="list-style-type: none"> • self –discovery/self-interest (6)
Career pathways perceived through others	<ul style="list-style-type: none"> • guidance, support, and training on career pathways primarily through others (6)
Career pathways for others	<ul style="list-style-type: none"> • knowledge of other career pathways (3)

The interview process continued with a focus on Question 2: *What are technical professionals’ opinions with regard to the motivation and the barriers they encountered with respect to entry into applied baccalaureate programs?* The sub-themes that were identified for this question included: (a) advisement; (b) transfer of technical credits to a four- year; and (c) multiple entry and exit points and course delivery.

Advisement

Participants shared perceptions of their academic advisement experiences at post-secondary educational institutions and other entities describing that advisement was available at both the two-year and four-year academic institutions, advisement from others, and advisement could have been better.

Ten out of 12 participants reported that advisement was available to them at both the community college and the university. When asked about the participants' advisement experience at the community college level, five out of 12 participants reported a positive advisement experience, with three of the five reporting receiving academic advisement from their instructors. Participants described their positive advisement experience as [P1] *"it's definitely helpful,"* [P2] *"I had a really good advisement experience..."*, and [P8] *"I had a great team actually, of advisors...Above the expectations, yeah."* On the contrary, two out of the 12 stated that their community college advisement needed improvement by stating, [P7] *"... it could've been a lot better"* and [P1] *"...the actual advisors themselves, I didn't get a ton of information or help from."* Though they received some formal advisement from institutional advisors, it was not sufficient, and instead [P7] stated *"So I was kind of left in the dark until talking to the program's director and ask the person that got it before,"* as well as [P1] *"I actually received more information and help from the instructors... the instructors were the ones that helped me fill out the paperwork, and sign up for the coop so that I would receive coop credits."* Only two participants reported that they did not receive any formal academic advisement at the community college. Instead, advisement was received from talking to co-workers and instructors. One participant stated [P6] *"I had gotten good advisement from my*

employers, people I work with.” Meanwhile, [P9] described advisement from instructors saying:

my teachers at the time...they would always talk about you know, the opportunities that they see. That their past students, where they’re working and you know, they would kind of communicate that you know, hey, this is the type of people they’re looking for...just some kind of information like that and kind of branch out to see what was out there and trying to just push that conversation.

The majority of participants (8) reported positive advisement experiences at the four-year level. Praising the advisement received from the instructor, [P2] stated “*she did quite a bit of advisement for me... She took care of me.*” One participant [P5] expressed that advisement provided was helpful and necessary for completing the degree based on a personal/career goal that they had set, saying “*they guided me to do everything I needed within that amount of time.*” Three participants reported several unique advisement experiences at the four-year level. Two of the participants reported experiencing inadequate advisement when they first enrolled at the institution as freshman in non-technical degree programs. As a result, they did not perform well academically during their first enrollment at the four-year institution which caused them to return to the community college to pursue a career and technical degree. However, upon returning to the university as a CTE transfer, the advisement experience was improved. The third participant shared her perception of inadequate advisement upon her initial entrance into the four-year institution with CTE credits already earned. According to participant [P11]:

The advisor that I had was limited in his knowledge of the transfer credit that I had already acquired, ended up taking, repeating classes that I already had the first semester, that I had already taken at JCJC...And that didn't happen until several years later and it would be my advisor when I changed my major to Applied Technology that actually took the time and invested in my career path, my education path.

Participants were asked about any other academic advisement experiences from any other areas in their lives. One participant [P1], an electronic engineering contractor explained that he received advisement from co-workers that going back to school to earn an advanced degree would be worth it.

I had co-workers, I was working in the same program I am now, but I worked as a contractor. My coworkers were all college graduates and they recommended I come back to school and finish, that it'll be paying off in the long run. It would be really hard for me. The two years I needed to get it done, but that in the end it will be worth it.

Transfer of technical credits to a four-year

All participants reported that their transfer from a two-year institution with technical credits to a four-year baccalaureate program was a positive and rewarding experience. None of the participants reported challenges with the transfer of their associate's level technical degree to an Applied Technology Baccalaureate program. Two participants reported problems with transferring credits when applying to a non-CTE program at the four-year institution. For example, according to [P4] "I had to take everything in the start of the computer science degree plan because unlike the applied

technology, nothing transferred other than the other basic 35 hours that you had to take for pretty much all the degrees.” Additionally, nine out of 12 reported that the opportunity to use their CTE course credits at the four-year was paramount in their decision to transfer and pursue a bachelor’s degree. One participant [P1] associated the ease of transferring his CTE course credits with the ability to afford further pursuing a higher degree.

No, I don’t really see any boundaries that prohibited. I will say that in high school and even when I was at the junior college that they really sold the idea of getting the two years done in junior college and working with [institution] because [institution] has a good relationship and was very open to accepting those from the junior college... there’s not a ton of money in my family. So finding a university that would accept credits from a junior college was pretty much the only way I could afford to go to school.

The majority of participants (9) said the ability to transfer their CTE credits motivated them to persist in attaining an advanced degree. Reflecting on the ease of transferring credits, participants expressed [P2] *“It’s wonderful. If it wasn’t for that I probably wouldn’t have my four-year degree, I wouldn’t have a Bachelor’s degree today.”* and [P3] *“Oh, it was real easy. And I’m glad I was able to use some of them classes, and they kind of encouraged my degree.”*

Multiple entry and exit points and course delivery.

Participants entered the Applied Technology program from multiple entry and exit points. Some entered from working several years in their career field and others entered directly from the community college. One participant [P1] who took a break from academics and re-entered said:

So I actually served a five year layoff. And decided to give school another try. And I came to the [institution] and met with the advisor there, and we looked over my transcript and see what my previous community college experience and she actually recommended I take the ...technology into consideration and changing my major.

Furthermore, participants left the program and pursued advanced job placement or advanced educations, or both. For example, upon receiving his four-year degree, one participant [P1] commented “*Well the first thing that happened to me was I got a raise, which was awesome...that lead into being able to start my Master’s degree.*”

Participants were asked about the importance of multiple entry and exit points and course delivery. Their responses were focused on the options to stop and start a degree program at their convenience until degree completion. The participants overwhelmingly agreed that having these options had a tremendous effect on their ability to complete the Applied Technology program. In addition to having multiple entry and exit points to education, the option to take the applied baccalaureate program was convenient and one participant reported that being able to take an online undergraduate program, gave him the courage to enter a Master’s degree program online. [P12] stated:

I worked a full time job while doing those degrees. My Associate’s and my Bachelor’s, I think that’s something that turned me on to wanting to get my Master’s, because the program that I’m looking at is offered fully online. And I think that’s really convenient.

Furthermore, the ability to start at any point (term) during the academic year allowed students to complete their degree. One participant [P3] commented “*It was an*

important option for me to have but I knew if I took a break I wouldn't have come back. I wouldn't have gotten that degree." Another [P4] agreed, "It definitely was... If I hadn't been able to stop and go and take courses online or things like that, I think I wouldn't have fulfilled the degree plan." Participants also noted that the option to take online and evening classes was a factor in their decision to begin and ability to complete their applied program. The flexible options allowed them to balance their academic, family and work obligations. One participant [P3] noted "Yes, it was easier for me because you know like I was saying I had a child and I was working, so evening classes worked out both for my job and for my whole family. And these online classes." Regarding these flexible options, another participant [P4] commented "Sure. If I hadn't had the option, then yeah, I wouldn't have been able to finish the degree plan... I'm in the MBA program – right now...without those I wouldn't be able to get the degree that I've been able to get."

Table 5 Theme: Seamless Transition

Sub-themes	Elements(# of participants)
Valuable Advisement	<ul style="list-style-type: none"> • advisement was available at both the 2-year and 4-year academic institutions(12) • advisement from others(5) • advisement could have been better(4)
Successful transfer of technical credits to a four-year	<ul style="list-style-type: none"> • No challenges with typical red tape (6) • Reduced the amount time in school(2) • Paramount in decision to transfer and pursue an applied baccalaureate degree(9)
Multiple entry and exit points and course delivery	<ul style="list-style-type: none"> • Critical to completing their degree (2) • Highly important(2) • Very convenient(12) • Top reason for taking program(1) • Reason why I could complete the Applied Baccalaureate degree(12)

Finally, the interview process ended with focusing on Question 3: *What are technical professionals' opinions with regard to whether CTE degrees lead to further education and improved employment opportunities to achieve economic success?* The sub-themes that were identified for this question included: (a) technical education from a two-year college; and (b) technical education from a four-year university. Participants reported their perceptions of how an applied baccalaureate degree impacted their career progression. These included that they: acquired a job (8), received higher pay (2), attained leadership position (4), acquired a job promotion (3), and accomplished a Master's degree (2).

Technical education from a two-year college

Participants overwhelmingly reported upward career mobility after receiving their CTE associate's degree from a two-year community college and the applied baccalaureate degree from a four-year institution. Six out of twelve participants reported they were able to attain a job after the two-year degree. According to one participant [P4], *"So I got employed after I finished the two-year degree...I also got the references during my two-year plan that ultimately got me the job I have now."* Another participant [P1] explained *"My two-year degree allowed me essentially to get a job interview... Ended up turning into an 8.5-year job until I was able to complete my degree at Southern Miss."* Moreover, four of the 12 participants reported that they were already working and received an increase in pay. For example, [P3] stated *"In regards to [institution], yes. It helped financially."* On the other hand, two of the 10 participants did not report getting a job after the two- year degree but they described having more career opportunities. One participant [P9] stated *"It opened up a lot of doors. A lot more job offers, a lot more*

opportunities for advancement. It just opened up doors for me.” Unfortunately, two of the 12 participants were not able to secure employment after receiving an associate’s degree. This was experienced by one participant [P7] who said *“After finishing the two-year degree, I felt that it was still kind of difficult to find employment, especially in the technical area in Meridian.”*

Technical education from a four-year university

Participants were asked what happened for them professionally after receiving a four-year degree. The same two participants who were unable to acquire employment after their two-year degree, reported that it was also difficult to find a job in their career and technical field after receiving the applied baccalaureate degree. However, they were able to find employment in other career fields. Six of 12 participants reported received job promotions and leadership positions with more responsibilities. Proudly one participant [P10] stated, *“Well when I completed my Bachelor’s degree, I received another job promotion, which now I’m at the top of my... all the way at the top of my level.”* Additionally, another participant [P1] explained *“So after I got the four-year degree... I’ve gone from supervising eight individuals to now having a team of 82.”*

Three out 12 participants reported that after receiving a four-year degree, they received a raise in pay at their current employment. One participant [P4] happily stated, *“After getting my two-year and my four-year degree, I got an almost 30% raise.”* One participant reported a different perspective of his experience upon receiving a four-year degree. The participant [P11] expressed *“Okay. Not as key as my technical training at my two-year, but with the four-year degree program, I was able to advance more of the leadership skills that I need for the management position that I have now.”*

Table 6 Theme: Significance of academic credentials

Sub-themes	Elements (# of participants)
Technical education from a two-year program	<ul style="list-style-type: none"> • Get job(9) • Increase in pay(2)
Technical education from a four-year program	<ul style="list-style-type: none"> • Leadership positions (4) • Managerial skills (3) • Higher pay(3) • Better job/Promotion (3) • Masters programs(3)

All of the findings provided a broad understanding of the lived experiences of a group of CTE professionals' career pathways. These were framed in light of their formal and informal interactions, institutional experiences, and workforce opportunities. These were realized through factors that aligned with elements of SCCT and the features of the AQCP framework which provide a foundation for the major themes that are discussed in the following chapter (See Table 7).

Table 7 Research Questions and Themes

Research Questions	Sub-themes
What is the relationship between proposed career pathways for technical professionals and career development of technical professionals?	<ul style="list-style-type: none"> • Career pathways primarily through self-discovery • Career pathways primarily through others • Career pathways for others
What are technical professionals' opinions with regards to the motivation and the barriers they encountered with respect to entry into applied baccalaureate programs?	<ul style="list-style-type: none"> • Valuable Advisement • Successful transfer of technical credits to a four-year • Effectual multiple entry and exit points and course delivery

Table 7 Continued

Research Questions	Sub-themes
What are technical professionals' opinions with regard to whether CTE degrees lead to further education and improved employment opportunities to achieve economic success?	<ul style="list-style-type: none"> • Technical education from a two-year program • Technical education from a four-year program

CHAPTER V – DISCUSSION

This chapter describes the purpose of the study as well as discusses the importance of the findings as it relates to quality career pathways that lead to CTE career progression. The research began with the following questions: 1) What is the relationship between proposed career pathways for technical professionals and career development of technical professionals? 2) What are technical professionals' opinions with regards to the motivation and the barriers they encountered with respect to entry into applied baccalaureate programs? and 3) What are technical professionals' opinions with regards to whether applied CTE degrees lead to further education and improved employment opportunities to achieve economic success? This chapter also discusses limitations for the study and recommendations.

Summary of Study Findings

Advisement as a foundation

The foundation of career pathways included both informal and formal academic advisement. Informal advisement occurred at the time that participants made a decision about their career pathways, which was driven by their self- interest. Participants discussed conducting research and engaging in conversation with individuals who were previously in the degree program, co-workers, and upper management in their jobs. Participants also experienced informal advisement while in their CTE programs at the community college. According to some participants, the CTE instructors provided specific advice on the course of action required to complete the degree plan. Progression to four-year applied baccalaureate programs was often encouraged by upper management. Furthermore, some participants received formal advisement provided by a

program advisor at the four-year institution. This included advisement on relevant coursework for successful completion of the applied baccalaureate degree.

These findings revealed that there was a clear presence of advisement provided to participants at the two-year and four-year levels and that this occurred informally at the beginning and during their academic and career progressions. The informal advisement helped guide them into their career pathway, while formal advisement helped the participants to progress in their career and technical program.

Seamless transitions

Institutional barriers from the AQCP framework did not hinder CTE professionals' higher education attainment. According to the AQCP framework (2014), institutional barriers to degree attainment include transferability of CTE course credits, multiple entry and exit points, and flexible course delivery options. In contrast, participants did not experience these features as barriers. The ease in the ability to transfer their academic and CTE credits from the two-year to the four-year institution was instrumental in participants' decision to continue their education. Multiple entry points to the applied baccalaureate program were represented among participants' experiences. Some participants continued their education by moving from a two-year to a four-year institution, while others' pathways involved two-year degree completion, workforce placement, and four-year degree attainment. Participants' transition to the four-year institution was greatly supported by the opportunity to enter the program at various points in the academic year (e.g., Fall, Spring, Summer semesters). Furthermore, the online course delivery option (available through the program) allowed participants to complete their four-year degree while working and meeting their personal obligations. Specifically,

concerns regarding a demanding work-life schedule and the inability to travel to campus were addressed through the availability of online courses. Furthermore, recognizing their own accomplishment in attaining their baccalaureate degree gave some participants the confidence to further pursue their Master's degree.

Significance of academic credentials

Advanced degrees did make a difference regarding career opportunities and progression. Most participants, with the exception of two, reported having greater job opportunities and career advancement opportunities after degree attainment at the two-year and four-year levels. Many participants were working while attaining their two-year degree. For those who were already working, receiving their degree provided a sense of job security because it was a required credential for career advancement. Those who were not working reported securing their desired job and were able to support their families financially. For participants who completed a four-year applied baccalaureate degree, better job opportunities, leadership positions, higher wages, and job promotions were reported as outcomes of degree attainment. Following higher wages, participants highly praised attainment of a leadership position.

Implications for Practice

A review of the literature revealed no study to date that has captured the perceptions of career and technical professionals within the state of Mississippi. In addition, very little research exists on the integration of career pathways in applied baccalaureate programs within post-secondary institutions. According to Skolnik (2010), the notion of students transferring from a technical program to a four-year institution is controversial. As a result, institutional academic policies and procedures do not provide a

clear educational pathway for CTE students to continue their career development, to include a baccalaureate degree and studies beyond (Skolnik, 2010).

Contrary to literature, the participants within the study reported experiencing a clear educational pathway from the associate's level degree to the applied baccalaureate degree and beyond. Research in the field does not directly address career and technical four-year professionals and their career progression (College Board, 2008). However, in the current study, participants revealed positive outcomes of degree attainment at the two-year and four-year levels that included financial gains and career upward mobility. These realized outcomes are relevant to all stakeholders (institutional administrators, policy makers and industry leaders) and should be tracked for the purpose of assessing the achievement of program and policy goals.

Overall, participants in the current study expressed positive views about their CTE career pathways and shared their unique experiences related to (a) advisement, (b) transition, and (c) the significance of their credentials to their career progression. These are discussed in the sections below.

Advisement

The literature most often discusses formal advisement (Beatty, 1991; Johnson & Morgan, 2005), yet, participants in the study also reported experiencing informal advisement through a variety of channels. According to Knowles (1984), adult learners are self-directed individuals. Although, the demographics collected for this study did not identify the ages of the participants in the study, many participants reported having the challenge of continuing their education while working and taking care of their families. These characteristics led the researcher to consider that most participants were adult

learners (Knowles, 1984). Further, Bragg and Rudd (2011) contend that applied baccalaureate programs aim to meet the educational needs of adult learners. The participants in the study agreed with the literature as the majority cited entering into their career pathways through self-directed inquiry.

Despite their ability to articulate their own CTE pathway experiences, the researcher found it interesting that the majority of participants did not think they were capable of providing advisement to others on CTE career pathways. Only one participant felt confident about advising others; however, this individual was a CTE administrator. Participants' decisions about their desired career pathways were based on self-interest that was reinforced through others. As mentioned in Chapter 2, in the context of individual influence on career success, an individual's character or own actions influence the magnitude of employability and career progression (Lee & Hogg, 2009).

Recognizing the importance of informal and formal advisement and when they occur, post-secondary institutions should implement practices that support these opportunities for CTE students. For example, one measure can be the development of relationships with external stakeholders in industry where CTE professionals are employed and are influenced to progress professionally.

Seamless Transition Experiences

A positive relationship was found between participants' desired CTE career pathway and their career development. This was attributed to a smooth transfer from a two-year to a four-year institution, which included advisement experiences and transferability of courses. According to Kotamrju (2014), CTE students are most likely to

be successful when there is a curriculum framework integrated with a well- defined career pathway.

According to AQCP (2014), multiple entry points and exit points to the academic experience are essential factors of a quality career pathway. In the current study, multiple entry and exit points were represented among participants through shared experiences of entering the applied baccalaureate program directly from the workforce or transfer from community college; participants left the program to secure greater job opportunities, or advancement of academic credentials. Additionally, participants described multiple entry and exit entry points as the support they received through course and program flexibility, as well as the attainment of a valid credential that led to job security. These were motivational factors in participants' persistence while moving through their career pathway. Overall, the features of the AQCP framework were supported by the findings in this study. This framework was created by stakeholders in higher education throughout the nation. Therefore, institutions offering CTE programs can implement the AQCP to evaluate the effectiveness of their program in supporting CTE students' career pathways. Along with the availability of multiple access points to CTE pathways, the opportunities to enter the four-year program at different points during the academic year was attributed to participants' persistence in their career. Given the values expressed by participants, institutions should emphasize these program features in their recruitment of potential four- year CTE applicants. Furthermore, in relation to participants' beliefs about their employability upon receiving CTE credentials, benefits included the ability to better support their families financially and attainment of promotions/higher positions in their fields.

Significance of Credentials to Career Pathway

A positive relationship exists between participants' desired CTE career pathway and their career development. As it relates to their career progression and attained credentials, with the exception of two participants, most had secured positions using their CTE credentials. The two who reported lack of employment opportunities reported that they were working in a non-CTE area because of their inability to find employment with their four-year CTE degree. However, despite this, one opened his own business, while the other gained employment as a result of having advanced degree attainment. The study findings support the literature as it relates to CTE career progression. According to Batts & Pagliari (2006), CTE graduates are motivated to pursue a four-year degree for professional development, job advancement, and increased salary. The participants in this research were reflective of the literature, as the majority of the CTE professionals cited that they could pursue career progression due to their academic credentials. A CTE graduate is often qualified to attain a higher paying wage than graduates of academic programs (Lewis, 2004). Additionally, Kotamraju (2014) reported that, "...following a definite credential progression and completion path...particularly for women and minorities...within a well-defined career pathway, the value added to wage earnings rises substantially." Further, this adds to the understanding of CTE career progression, indicating recommendations for future studies.

Limitations

The current study had several limitations. First, there was a potential for researcher bias due to the fact that the researcher is the current program coordinator in the applied technology program from which participants were alumni. Second, the data was

self-reported; therefore, reports from participants were subjective. However, the study used a phenomenological approach to learn about the essence of CTE students' experiences. Fourth, participants may have failed to fully report their CTE pathway experiences, due to personal factors and time pressure of interviewing during their daily time commitments (Merriam & Tisdell, 2015). Finally, according to Ferguson (2004), research data lack generalizability if the findings do not apply to other populations. The study was limited to a particular group of career and technical education professionals (CTE) specifically, Applied Technology alumni from the University of Southern Mississippi from the classes of 2007-2008 through 2017-2018. Therefore, the current study lacks generalizability as the sample of participants was from the same organization and geographical location, and findings cannot be inferred to a general population.

Recommendations for Future Research

While there are recent studies regarding the CTE student transfer process from secondary to post-secondary institutions, interest remains in studies of career pathways for CTE professionals. Further research should investigate the different backgrounds of CTE students, their career trajectories after degree attainment, and the influence of job advancement on improving their quality of life. Furthermore, quantitative or mixed methods should be employed in further research to gain a greater understanding and to compare the quality of applied baccalaureate CTE programs in the state of Mississippi. This can be accomplished using the AQCP and SCCT frameworks. According to Jacob (2017), the states play a large role in all matters concerning CTE programs; therefore, they must issue policies and procedures to regulate CTE. Further, Mupinga & Livesay (2015) state that industry leaders are taking the initiative to building relationships with

four-year institutions to ensure opportunities are available for applied baccalaureate attainment for their technical employees' career development (Mupinga & Livesay, 2015). Thus, the use of these frameworks at the state-level would be relevant in assessment initiatives for developing policies for the support and advancement of CTE programs.

Summary

The current study sought to explore whether or not an applied baccalaureate program in Mississippi offers quality career pathways to career and technical professionals. The AQCP framework (2012) was used to assess the quality of career pathways which included features such as a well-connected and transparent education and multiple entry and exit points. Furthermore, Social Cognitive Career Theory was used to gain an understanding of CTE professionals' persistence to and through their career pathways.

APPENDIX A – IRB APPROVAL LETTER



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INSTITUTIONAL REVIEW BOARD

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NOTICE OF COMMITTEE ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure: |

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately, but not later than 10 days following the event. Problems should be reported to ORI via the Incident template on Cayuse IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER: IRB-18-93

PROJECT TITLE: Factors influencing career and technical professionals' career advancement.

SCHOOL/PROGRAM: School of Education, Educational Research and Admin

RESEARCHER(S): Deidra Minor

Lilian Hill

IRB COMMITTEE ACTION: Approved

CATEGORY: Expedited

PERIOD OF APPROVAL: November 19, 2018 to November 19, 2019

Edward L. Goshorn, Ph.D.,

Institutional Review Board Chairperson

APPENDIX B Approval Letter for Use of Image

Deidra Minor

From: Sent: To: Subject:

Judy Mortrude <jmortrude@clasp.org >

Sunday, July 15, 2018 12:30 AM Deidra Minor

Re: Letter Seeking Permission to Use Three Essential Features of Career Pathways Image

Thanks for your request, Deidra. Please do use any of the AQCP content. Let me know if there's something specific you'd like to find and I may be able to direct you.

Judy

On Jul 15, 2018, at 1:02 AM, Deidra Minor <deidra.minor@usm.edu> wrote:

Deidra Minor

The University of Southern Mississippi

Department of Educational Research and Administration 220 Pine Lane

Hattiesburg, MS 39402 Dear Sir/Madam:

I am a doctoral student from The University of Southern Mississippi writing my dissertation titled Factors influencing career and technical professionals' career pathways, under the direction of my dissertation committee chaired by Dr. Lilian Hill, who can be reached at 601-266-4622 or Lilian.Hill@usm.edu.

I would like your permission to use the Alliance for Quality Career Pathways. (2014). Shared vision, strong Systems: Three Essential Features of Career Pathways image in my research study. I would like to use and print your image under the following conditions:

- I will use the image only for my research study and will not sell or use it with any compensated or curriculum development activities.
- I will include the copyright statement on all copies of the image. I will send a copy of my completed research study to your attention upon completion of the study. If these are acceptable terms and conditions, please indicate so by replying to me through e-mail:

Deidra.Minor@usm.edu

Sincerely,

Deidra Minor

APPENDIX C Interview Preamble

Date:
Time of Interview:
Duration:
Method:
Interviewer:
Interviewee:

Interview Preamble

1. **Interviewer:** Do I have your permission to record and proceed to the interview? Yes or No [circle response]
2. **Interviewer:** *[No response to record]* May I ask why you do not want the interview recorded? [Based on response, provide confidentiality strategy. If refusal remains, take written notes.]
3. **Interviewer:** *[Yes response to participate—begin recording]* Thank you for your permission to record your interview. Before we begin the actual interview, I would like to provide an overview of the study, confidentiality, informed consent and the benefits of participation. Please feel free to ask any questions. This study is seeking your perceptions and ideas regarding education and career pathways for career and technical professionals in Mississippi. Participation in this study poses no known identifiable risks. Participation in the project is voluntary, and participants may withdraw at any time without penalty, prejudice, or loss of benefits. You may skip any questions you do not wish to answer. All personal information is strictly confidential and no names will be disclosed. If you desire, you may use a pseudonym, a fictional name assigned to give disguise. All data will be stored in a password protected electronic format. The researcher is the only person who will have access to data gathered for completing doctoral research requirements. This project has been reviewed and approved by the Institutional Review Board of the University of Southern Mississippi, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the IRB at (601) 266-5997
4. **Interviewer:** Do I have your consent that you would like to participate in the study and proceed to the interview? Yes No [circle response]
5. **Interviewer:** *[No response to participate]* Thank you for your time. Please contact me if you have any questions about the study, if later you decide to participate, or you would like to refer someone to participate.
6. **Interviewer:** *[Yes response—proceed to interview questionnaire]* Before we begin, I would like you to confirm with your name or would you like to use a false name?

APPENDIX D Interview Questionnaire

Demographics

1. Please provide information concerning your educational and professional experiences:
 - a. Where did you attend community college?
 - b. What was your major field(s) of study at the community college?
 - c. Are you currently employed? If so, how many years of professional experience do you have in your technical profession?

Career pathways are plan strategies to transition individuals from education to work. Quality features of career pathways include: *Well- connected and transparent education* with adequate training, support services and credentials. *Multiple entry points* to education and *multiple exit points* with credentials for employment.

Please keep these quality features in mind as I ask the following questions to gather information regarding Mississippi's career pathways for individuals who desire a technical profession.

1. Describe the main source of information about a career path for you?

[**Probe:** How did you learn about career paths for you? As you think about career paths consider decisions involving education leading to work/occupation.]

2. Describe the training and support that you received to gain knowledge about career progression in your field?
3. What do you know about educational career pathways for individuals with a technical degree/profession outside of your own personal experiences?
4. Describe your career and technical degree advisement experiences:

- a. Describe your advisement experiences from your two-year college.
 - b. Describe your advisement experiences from your four-year institution.
 - c. Describe the academic advisement experiences at any institution that you feel influenced your decisions about your technical career progression
5. Can you describe any challenges that you endured at a four-year institution such as academic program offerings, admissions policies and procedures, transferability policies, etc. Can you think of any challenges that influenced your decisions about your education and technical career progression? [**Probe:** For example...whether you were going to stop or continue pursuing a degree.]
6. Describe the importance of having the option to transfer career and technical coursework from the community college to a four- year institution.
7. How important was it to have the option to stop and start a degree program at your convenience until degree completion. [**Probe:** For an example, you may start during any semester (fall, summer, spring), (you could skip a semester or two.)
8. Describe the importance of having the option to take online and/or evening classes to your decision to begin your program at a four-year institution?
9. Describe the importance of education and technical career pathways to your ability to financially support yourself and family.
10. How has your technical education from a two- year program influenced your ability to attain advancement within your technical profession? [**Probe:** What happen for/to you professionally -after your 2 year degree?]

11. How has your technical education from a four- year program influenced your ability to attain advancement within your technical profession? [**Probe:** What happen for/to you professionally -after your 4 year degree?]
12. Is there anything else that you would like to talk about that I have neglected to ask?

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